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The DB Site

An Archaeological Site
at Fort Leavenworth, Kansas



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You may not realize how long people have been living in Leavenworth County, Kansas. The DB archaeological site (site number 14LV1071), located on a bluff overlooking the Missouri River, has evidence of human occupation going back 10,000 years. Most of the artifacts date to two periods: 4000-500 B.C. and A.D. 900-1400. This site reveals a lot about the lifestyle and activities of people who were here long before we were.

Discovery and evaluation of the site

The DB site was discovered in 1994 during an archaeological survey by the University of Kansas Museum of Anthropology (KUMA) in and around the Quarry Creek drainage, Leavenworth County, Kansas. Many archaeological sites are discovered during a survey, in which archaeologists walk through a designated area and examine the ground for artifacts on the surface. If the ground cover is too dense to see the surface, they perform shovel tests. A shovelful of earth is scooped out at constant intervals along the survey route and checked to see if it contains artifacts. While this method can miss some sites, it has revealed the presence of many others.

It was clear from plans of the proposed United States Disciplinary Barracks that construction of this prison would disturb the site. Was the DB site significant enough to take action? KU archaeologists answered this question by conducting additional surveys and test excavations in July and October of 1995.

The crew walked over the ridge where the site was located, and dug a number of shovel tests to see where artifacts were distributed. They found that the site covered about 23,000 square meters, or 27,500 square yards—the equivalent of almost 14 football fields!. To learn more about the deposits in the site, they excavated six square meters (about 65 square feet) in July, and another 34 square meters (about 366 square feet) in October. The team of archaeologists found enough to suggest that this site was large and mostly undisturbed, and that it represented the activities of several different groups of people who revisited the site for thousands of years.

Excavation

Major excavation of the DB site took place in the summer of 1996. Aware that the site would be destroyed soon, Dr. Brad Logan, the director of the project, devised a strategy to get as much information as possible from the site with the time and money available. Excavators, working in squares two meters across, carefully shaved soil from the surface with shovels and collected it for screening. The soil was washed through screens (a process known as water screening) so that all pieces over 1/8" were recovered. Special soil samples (flotation samples; see below) were also taken from each level within a unit to recover even smaller remains.

One of the most important kinds of information archaeologists record is provenience (where items were found). If they know the provenience of the artifacts, they may establish the number of visits to the site, assign pieces to different groups of people, reconstruct the placement of different activities, and trace the formation of the site. Without provenience, archaeologists have a hard time testing any ideas they have about what happened at a site. An artifact without provenience or context carries little information.

The archaeologists at the DB site carefully recorded information about artifact provenience during excavation. They mapped any artifact over 2.5 cm (1 inch) in length, and kept track of water-screened material from the different squares. This information proved to be very valuable when the archaeologists tried to reconstruct events at the site.

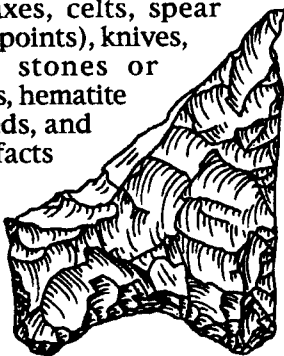
By the end of July 1996, 165 square meters (1,776 square feet) had been excavated. The deadline for completion was approaching fast. Any information the crew missed now would be forever lost when the construction crews and heavy machinery moved in to build the prison. Hoping to reveal some of the last secrets of the site before it was destroyed, the archaeologists followed a grader as it rumbled around the excavation, scraping away the soil from an additional 3500 square meters (37,674 square feet) and uncovering artifacts. Many of these artifacts were mapped in place. The soil was removed down to about 60 cm (24 inches) below the ground surface, the depth of most of the artifacts.

Laboratory analysis

In August 1996, the archaeologists carried back the last of the artifacts to KUMA, and began the long process of cleaning, identifying, and analyzing them. One of their tasks was to process the flotation samples collected in the field. Flotation samples are soil samples that are washed in a special tank to find small artifacts, particularly charred plant remains. (Plant remains, such as corn, nuts, or grass seeds, are normally only preserved in archaeological sites in Kansas if they are burned or charred; otherwise, they simply decay like other organic materials.) When the soil sample is dumped into a tank of water, charred plant remains float to the top and are collected in a special tray.

The researchers spent about six months preparing the excavated materials for analysis. Samples from the water screen were sorted by type of artifact. Pieces were assigned catalog numbers. All of the artifacts were washed, weighed, and bagged, and a detailed inventory was created. After all of this preliminary work in the lab, the archaeologists began studying the different classes of artifacts more intensively.

A wide variety of different artifact types was recovered, including axes, celts, spear projectile points), knives, grinding stones or stone tools, hematite shells, seeds, and these artifacts worn, where hoped to the site place



ent artifact types was recovered, including and arrow points (also known as ceramic sherds (vessel fragments), manos, hammerstones for making or "ocher," and charred wood, nut-corn. The researchers studied how were made, how they were used and what they were made from and they were found. Ultimately, they answer some basic questions about and the human activities that took there.

Who were the inhabitants of the site, and when were they there?

This question can be answered with the use of different dating methods, such as radiocarbon dating, and/or the analysis of diagnostic artifacts. Diagnostics are artifacts such as projectile points or ceramic vessels that vary widely in style through time and space. Different styles appear to represent different groups of people and different time periods. Modern studies of style support the idea that different social groups have different styles of dress, tools, and household gear. Differences in time for different styles have been supported by radiocarbon dates and other dating methods.



The oldest point types at the DB site are from the Paleoindian period and date to about 10,000-9,000 years ago. Paleoindian people specialized in hunting bison at the end of the Ice Age. Other point styles suggest that people continued to visit the site during the Archaic period (6000-500 B.C.). Archaic people hunted and foraged wild animals and occupied sites like DB for relatively short periods. Points dating to the period 500 B.C.-A.D. 900 are sparse. The next major period of occupation seems to be in the Late Prehistoric, after about A.D. 900.



Pottery is first found in the Central Plains after 2000 B.C., but no early pottery has been identified at the DB site. Only one ceramic

sherd from the site might belong to the time period 500 B.C.-A.D. 900. The remainder of the sherds date to the late prehistoric

Fig. 1. Points or fragments dating to roughly 9000 years ago (top), 5000 years ago (middle), and 700 years ago (bottom). The two uppermost points were probably used with spears. Points are shown actual size.

"Steed-Kisker phase," which is radiocarbon dated at the DB site in the 1300s.

One of the most interesting findings of the DB project was the similarity in stone tools between Indians of the modern Kansas City and St. Louis areas. It now appears that some relations (trade, inter-marriage, migration, and/or the exchange of ideas or technology) were maintained between these areas from about 5500 to 600 years ago.

What were they doing at the site?

It is difficult to say exactly what individual groups of people did at specific times because of the way the site formed. Site formation was studied by looking at the stratigraphy (layers in a site). Ideally, the earliest occupations leave material behind that gets buried by soil. The next group comes along and leaves their material on the new surface, which then gets buried as well. Each layer belongs to a particular event or time period, with the older material in the bottom layer and the younger in the top.

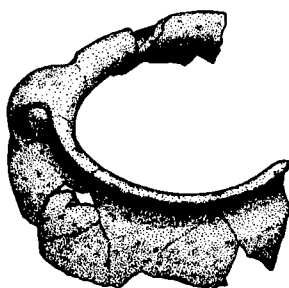


Fig. 2. Partially reconstructed vessel rim (shown at 30% original size).

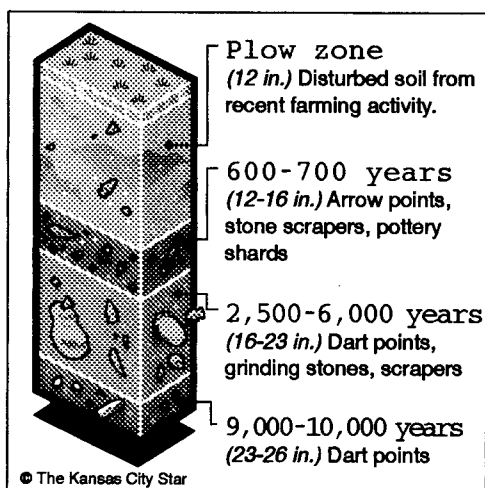


Fig. 3. Stratigraphic profile from the DB site (Dave Eames, *Kansas City Star*).

During the early time periods at the DB site, material was not buried for long periods of time. Objects sat on the surface for years and years, piling up as more people visited the site over the centuries. Hearthstones were kicked around, charcoal was scattered, and old tools were moved, reused, or taken. The lower layers of the site, therefore, are the result not only of individual camping or other activities, but of hundreds of years of traffic.

Around 2400 years ago, the site was covered by a thick layer of windblown sediment. The late prehistoric people who came to the site lived and worked on top of this layer. This occupation may have lasted only one or a few seasons. While some of the late prehistoric artifacts fell into rodent burrows and cracks in the soil, more of these artifacts are still in place and reveal where certain

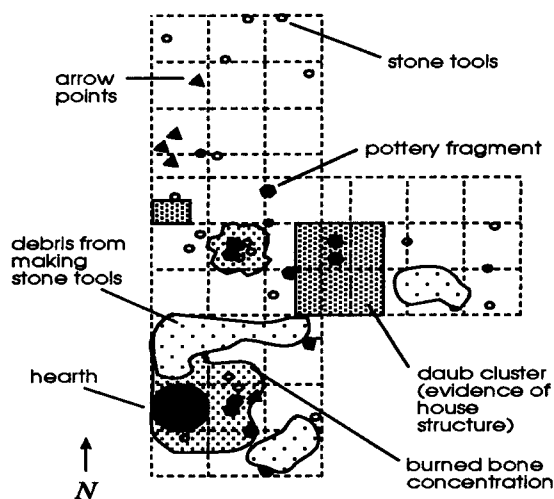


Fig. 4. Reconstruction of activity areas in the Late Prehistoric (A.D. 1300-1400) level.

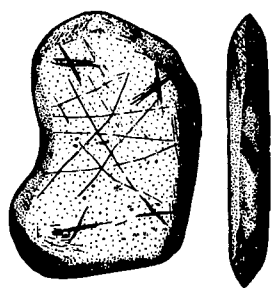


Fig. 5. Hematite celt (50% size).

piles of debitage (the stone pieces and fragments that result from knapping a block of chert). Hematite was ground, probably for use in paint and dyes, and one large piece was shaped, polished, and decorated with Xs and other lines (Fig. 5). Chipped stone scrapers (Fig. 6) may have been used for hide-working, and drills may have been used for a number of jobs, including the preparation of clothing and jewelry. Stone axes (Fig. 7) were used for chopping down trees and for woodworking.

What were they eating, and how were they preparing it?

Nearby habitats with potential food sources included tallgrass prairie, upland and lowland forests, and riverine environments. The site itself was probably in a wooded area during most of the last 10,000 years.

Bone does not preserve well in the acidic soils of wooded areas. Only a few small scraps of animal bone were recovered during excavation of the site, and so little can be said about the hunting and fishing activities of the site's inhabitants, or about any bone tools they may have used. None of the fragments seem to be bison bone, how-

activities happened. The figure to the left displays some of the activity areas found in the top excavated layer.

More general statements about activities in all time periods are based on the types of artifacts found. Abraders made of sandstone and scoria (a pumice-like rock) were used to smooth arrow shafts and to roughen the edges of a block of chert for flintknapping. Evidence for flintknapping at the site includes not only these abraders but



ever, which suggests that people at the site were mostly eating smaller game, such as deer or rabbits. Stone knives (Fig. 9) were found that could have been used to butcher the animals.

Fig. 6. Scraper (50%).

Direct evidence of plant use is equally sparse, at least in terms of the variety of species. Plant remains were found in both the water screen and flotation samples. Numerous charred fragments of black walnuts and corn were recovered. Corn was only found in the top two levels and belongs to the late prehistoric groups. (The earliest evidence of corn in the Central Plains dates to about A.D. 250-400.) Black walnuts appear in all of the levels, and these nuts may have been an important food source for which people visited the area.

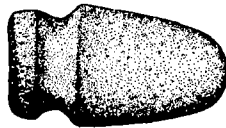


Fig. 7. Axe (25%).

We know a little more about what they were eating and how they were preparing it from phytolith analysis. Phytoliths are microscopic pieces of silica found within plants that generally preserve much better than the plants themselves. Because phytoliths take their shapes within the plant's cells, cell walls, and intercellular spaces, the original plant can often be identified from the shape of the phytoliths. Phytoliths are collected within soil samples.

To find out what plants were being ground with particular grinding tools, the dirt immediately next to the grinding surface was collected and analyzed for phytoliths. Two of the grinding stones from the DB site had phytoliths from wild grass seeds, suggesting that these tools were used to process these seeds (probably for food). Modern people grind seeds from cultivated grasses such as wheat and barley for food.

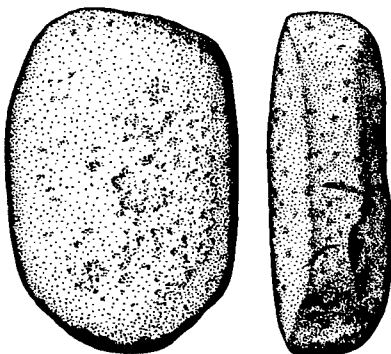


Fig. 8. Mano (50%).

While there were a few formal manos (prepared grinding stones) at the site (Fig. 8), most of the grinding stones present were glacial cobbles that were smooth on one or more sides. There were also several slabs of quartzite or sandstone upon which they ground different materials. While people in many parts of the world made, and still make, elaborately shaped and decorated grinding tools, the people at DB often simply used what was available naturally.

There are some broken ceramic vessels at the site from the late prehistoric people, which indicates that these people were carrying or storing something (possibly food or water) at the site. They may also have been cooking meat or plant products in these vessels.

Where did they get material for tools?

One important material is chert, which can be made into chipped stone tools. The word "chert" is a general term for all sedimentary rocks composed primarily of microcrystalline quartz. American archaeologists and geologists consider materials such as flint and jasper to be types of chert. Because chert fractures in a distinctive way, it can be flaked into various shapes to make points, knives, scrapers, drills, and other tools.

Chert can be found within limestone outcrops. It may also erode out of these outcrops and be redeposited in glacial till or stream beds. Different types of chert are named for the limestone member in which they occur and can often be generally identified based on color, texture, and presence or absence of fossils and other inclusions.

The chipped stone tools at the DB site from all time periods are made primarily from local cherts (available within a 10-15 km radius of the site). Dense hematite from nearby glacial till deposits was also flaked into rough bifaces and choppers.

Other types of chert, present in smaller proportions are available about 15-20 km away in the Kansas City area and south of Kansas City. Some long-distance exchange or movement is suggested by the presence of several chert types only found more than 45 km away to the north and west and from the Flint Hills region at least 75 km to the west. Another important exotic chert comes from west-central Missouri, about 130-140 km away.



Fig. 9. Knife (50%).

Conclusion

The DB site contained valuable information about people in the past—information that would have been lost forever if the site had not been excavated by professional archaeologists. Archaeological sites are national treasures, and help us learn about distant times and long-dead people.

Archaeologists need your help to preserve our nation's cultural heritage. Please don't loot archaeological sites. Treat them with care, and realize that without good provenience information, artifacts cannot reveal much about the people who made them. Feel free to contact archaeologists at the state universities and at the Kansas State

Historical Society with information you have about sites in your area.

Recommended reading

If you are interested in learning more about the prehistory of Kansas, here are some good sources:

Archeology in Kansas by Patricia J. O'Brien (1984). It may be available in local bookstores, or write the Publications Secretary, Museum of Natural History, University of Kansas, Lawrence, Kansas 66045 (this book is No. 9 in the Public Education Series). This book describes survey techniques and site recording for the amateur as well as diagnostic artifacts from the major time periods in Kansas.

The Kansas Anthropologist, the journal of the Kansas Anthropological Association. For information about the journal, membership in the KAA, and educational opportunities such as archaeological field schools, contact Virginia Wulfkuhle at the Archeology Office of the Kansas State Historical Society, 6425 SW 6th Ave., Topeka, KS 66615-1099 (913-785-8681, ext. 268).

All illustrations of artifacts were done by Sarah Moore. Other figures were by Dave Eames of the Kansas City Star (Figure 3) and Matthew Hill (Figure 4). Text was written by Margaret Beck.

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